

FORM PTO-1390  
(REV. 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

520.1006

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/980963

INTERNATIONAL APPLICATION NO.

PCT/EP00/04816

INTERNATIONAL FILING DATE

26 May 2000

PRIORITY DATE CLAIMED

4 June 1999

TITLE OF INVENTION

ACOUSTIC-MECHANICAL VERIFICATION TRANSMITTER

APPLICANT(S) FOR DO/EO/US

Marian TRINKEL

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

## Items 11 to 20 below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
14. ☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information:
  - Formal Drawings (4 sheets)
  - References cited in Information Disclosure Statement
  - Letter re: Priority

ATTORNEY'S DOCKET NUMBER  
520.1006

21. ☒ The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

Neither international preliminary examination fee (37 CFR 1.482)  
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO  
and International Search Report not prepared by the EPO or JPO..... **\$1000.00**

International preliminary examination fee (37 CFR 1.482) not paid to  
USPTO but International Search Report prepared by the EPO or JPO ..... \$860.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO  
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO . . . . . **\$710.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) . . . . .	\$690.00
--	----------

International preliminary examination fee (37 CFR 1.482) paid to USPTO  
and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	13 - 20 =	0	x <b>\$18.00</b>	\$
Independent claims	2 - 3 =	0	x <b>\$80.00</b>	\$
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ <b>\$270.00</b>	\$

**MULTIPLE DEPENDENT CLAIM(S) (if applicable)**

+ \$270.00

**TOTAL OF ABOVE CALCULATIONS =**

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.

<b>SUBTOTAL</b>	=	\$ 860.00
-----------------	---	-----------

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).

<b>TOTAL NATIONAL FEE</b>	=	\$ 860.00
---------------------------	---	-----------

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00** per property +

<b>TOTAL FEES ENCLOSED</b>	=	\$ 900.00
----------------------------	---	-----------

Amount to be refunded:	\$
------------------------	----

charged:	\$
----------	----

- a. ☒ A check in the amount of \$ 900.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-0552 . A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO.

William C. Gehris  
Davidson, Davidson & Kappel, LLC  
485 Seventh Avenue, 14th Floor  
New York, New York 10018  
U.S.A.

SIGNATURE

**William C. Gehris**

NAME \_\_\_\_\_

38,156

REGISTRATION NUMBER

[520.1006]

**UNITED STATES PATENT AND TRADEMARK OFFICE**

Re: Application of: Marian TRINKEL  
Serial No.: To Be Assigned  
International  
Application No.: PCT/EP00/04816  
Filed: Herewith  
For: ACOUSTIC-MECHANICAL VERIFICATION  
TRANSMITTER

BOX PCT  
Asst. Commissioner for Patents  
P.O. BOX 2327  
Arlington, VA 22202

December 4, 2001

**PRELIMINARY AMENDMENT**

Sir:

Applicants request that the following Amendments be made in the above-identified matter prior to examination thereof:

**IN THE TITLE**

Please amend the title to read as follows: --ACCESS-CONTROLLED SYSTEM WITH ACOUSTIC-MECHANICAL VERIFICATION TRANSMITTER--.

**IN THE DRAWINGS**

Please replace Figure 1 of record with the amended Figure 1 submitted herewith.

**IN THE SPECIFICATION**

Before paragraph [0001], please insert the heading --BACKGROUND--.

Please amend paragraph [0001] as follows:

[0001] The present invention relates to a system including a portable identification medium, for example in the form of a card, and a control unit with which information which is encoded on the identification medium can be read, the control unit allowing a user to access the system once the identity of the identification medium has been established.

Please amend paragraph [0003] as follows:

[0003] In these systems, it is a disadvantage that not only the medium must be equipped with a magnetic strip or a chip, which requires a comparatively large expenditure of effort and money but, above all, that the control unit must be provided with a device for reading out the information, involving a corresponding degree of expenditure. Thus, the control unit must have, in particular, an intake for the medium. This intake, for example, a slot having an appropriate mechanism, requires considerable outlay and is susceptible to vandalism.

Please amend paragraph [0004] as follows:

[0004] Known are, moreover, such systems in which the code is transmitted acoustically with the assistance of an electronic tone generator located on the medium. In these systems, the medium requires a large expenditure of effort and money because of the generator. Besides, the transmission is very unreliable and frequently gives rise to system errors. Moreover, devices in the form of cards are known which have a toothed profile on one edge, the information being encoded in the arrangement of the teeth. The acoustic signal is generated by sweeping an object over the profile, a noise developing in the process. In this context, it is a disadvantage that, in addition to the medium, a further object must exist which is used to generate the signal. Due to the additionally required object, the system is complex and unpractical. Besides, the signal is reproducible only with difficulty since it depends on the speed and completeness of the sweeping movement.

Before paragraph [0006], please insert the heading --SUMMARY OF THE INVENTION--.

Please amend paragraph [0006] as follows:

[0006] Therefore, an object of the present invention is to provide an access-controlled system which is rugged, easy to handle and inexpensive to manufacture while being highly reliably and reproducible. It is also an object of the present invention to provide an identification

medium which supports the system according to the present invention and at the same time is reliable, rugged and inexpensive.

After paragraph [0006], please insert paragraph [0006.1] as follows:

--[0006.1] The present invention provides an access-controlled system. The access-controlled system includes a portable identification device including an element configured for generating a reproducible acoustic signal in a mechanical manner, a frequency spectrum of the signal encoding an information. Also included is a control unit configured for reading the encoded information and for allowing a user to access the access-controlled system upon an establishing of an identity of the identification device.--

Please delete paragraph [0007].

Please amend paragraph [0008] as follows:

[0008] According to the present invention an acoustic signal-generating device is attached to the identification medium which, after a mechanically applied force has acted thereon, for example, subsequent to a pressing by the user, emits an acoustic signal by which the medium can be identified. To enable a reliable identification, it is required for the acoustic signal, whose frequency spectrum encodes information, to be reproducible. A generated signal must correspond to each further generated signal as exactly as possible.

Please amend paragraph [0009] as follows:

[0009] It is conceivable for such a system to be used in many areas. Thus, it is possible for telephone cards or credit cards to be provided with the device according to the present invention. In the case of a telephone card, the acoustic signal would be picked up via a microphone of the telephone system, for example, through the handset, and sent to a central computer via the telephone line. The central computer would then carry out the billing of the telephone call, the billing being allocated to the owner of the card via the acoustic signal. In the case of a credit card, it would be possible for the customer or account number of the card holder to be encoded in the signal. In this context, however, it is advantageous if the user authorizes himself/herself by entering a PIN code which is only known to him/her into the control unit.

Please amend paragraph [0011] as follows:

[0011] In principle, strings, rods, tongues, membranes, plates or air columns can be used as signal-generating device. However, it is particularly simple and, therefore, advantageous, if the

signal-generating device features a tongue and/or a curved surface which is attached onto the medium in such a manner that it/they can be acted upon by a user pressing with a finger against a resistance, and that it/they emit(s) the signal ("clack") when the resistance is overcome. Devices of that kind are known as toys (frog clickers). After the clacking threshold is overcome, the [means] device springs back to the initial position. In this context, the mostly different noise ("click") emitted while springing back can also be used for encoding information.

Please amend paragraph [0012] as follows:

[0012] In this context, in an embodiment, the encoding of the information is effected by the individual shaping of the tongue or surface and/or by the design of their suspension, i.e., for example, by changing the resistance to be overcome. Extensive tests have shown that such a device can generate an individual signal from whose frequency spectrum the coded information can be reliably read, advantageously after a Fourier transformation. In the course of time, the characteristic does not or only slightly change, it being possible for such a change to be allowed for via the computational algorithms. It is also conceivable for the information to be encoded by individually shaping the resonator, the individualization having to be effected by more significant measures in this case.

Please amend paragraph [0014] as follows:

[0014] In an embodiment, the tongue or curved surface are integrally formed on the identification medium which is designed as a card. To produce a resistance, it is advantageous for the tongue to be provided with a longitudinal groove or with walls which project perpendicularly to the top surface of the card. A "clacking" effect can also be attained via a peripheral clamping on both sides. The integral formation provides a good coupling of the device to the resonator and, in this manner, a correspondingly good sound amplification.

Please amend paragraph [0016] as follows:

[0016] In an embodiment, the medium is designed as a key tag, thus being handy at any time and relatively unlosable. Moreover, it can be advantageous to provide the medium, in particular the card, with a magnetic strip and/or with a chip or to provide known cards with a device according to the present invention for generating an acoustic signal. In this context, the acoustic signal can be used for a redundant individualization so that security is further increased.

Before paragraph [0017], please insert the heading --BRIEF DESCRIPTION OF THE DRAWINGS--.

Please amend paragraph [0018] as follows:

[0018] Figure 1 shows a control unit and a hand with an identification medium in the form of a card;

Figure 2 shows a card in a top view (a) and in an elevation (b);

Figures 3a)-3e) show the tongue of a card with different shapes; and

Figure 4 shows a tongue clamped on both sides.

Before paragraph [0019], please insert the heading --DETAILED DESCRIPTION--.

Please amend paragraph [0019] as follows:

[0019] Figure 1 shows a control unit 20 and an identification medium in the form of a card 1 in the known cheque card size which is held in hand 2 of a user of the system. On card 1, individual information is encoded in the acoustic signal which is emitted by a curved surface 4 formed in card surface 3 when the curved surface is pressed in by the pressing of thumb 5 against a resistance. The information is encoded in the frequency spectrum of the noise ("click-clack").

Please amend paragraph [0020] as follows:

[0020] Card 1 is manufactured in known manner from plastic (PE) and serves as a resonator. Provided in the card is an opening 6 which is covered by a tongue 7 in the case of the embodiment according to Figure 2. Tongue 7 is formed of metal and secured onto the card via weld points 8 in a manner that it is prestressed. Tongue 7 has a depression 9 which generates a tension, thus influencing the frequency spectrum of the acoustic signal. Card 1 according to Figure 2 has a cut-out 10 to which a key 11 can be attached.

Please amend paragraph [0021] as follows:

[0021] Figure 3 shows tongues which are differently shaped and, therefore, generate different noises. All tongues have a depression 9. Provided in the tongues according to Figures 3a) and 3b) are small bores 12 which give rise to a shift in the frequency spectrum. Bores 12 are placed at different locations of tongues 7 and, therefore, generate different frequencies. In tongues 7 of

the embodiments shown in Figures 3c), 3d) and 3e), provision is made for slits 13 at different locations or in different sizes. The shown alterations of tongue 7, which can be effected by the users themselves, give rise to differences in the frequency spectrum which can be detected by the system, as tests have shown.

Page 8, first line change "What is claimed is" to --WHAT IS CLAIMED IS--.

#### **IN THE CLAIMS:**

Please cancel claims 1-11 as presented in the underlying international application no. PCT/EP00/04816 and add new claims 12-24 as follows:

--12. (new) An access-controlled system comprising:

a portable identification device including a signal generator device configured for generating a reproducible acoustic signal in a mechanical manner, the reproducible acoustic signal including a clacking noise, a frequency spectrum of the clacking noise encoding an information, the signal generator device including at least one of a tongue, a plate, and a curved surface configured for folding upon an overcoming of an initial resistance, the folding generating the clacking noise, the respective at least one of the tongue, the plate, and the curved surface further configured for springing back to a respective original position subsequent to being acted upon; and

a control unit configured for reading the encoded information and for allowing a user to access the access-controlled system upon an establishing of an identity of the identification device.

13. (new) The access-controlled system as recited in claim 12 wherein the control unit includes a microphone useable for feeding the acoustic signal to a computing unit configured for establishing the identification of the identification device.

14. (new) The access-controlled system as recited in claim 12 wherein the identification device includes a card.



15. (new) The access-controlled system as recited in claim 14 wherein the card includes a plastic material.

16. (new) The access-controlled system as recited in claim 14 wherein the card has dimensions of a credit card.

17. (new) The access-controlled system as recited in claim 12 wherein the identification device includes at least one of a membrane body and a resonator.

18. (new) The access-controlled system as recited in claim 12 wherein the control unit is configured for receiving a code.

19. (new) The access-controlled system as recited in claim 18 wherein the code is an acoustic PIN code.

20. (new) An identification device configured for use in an access-controlled system, the access-controlled system including a control unit configured for reading information encoded by the identification device and for allowing a user to access the access-controlled system upon an establishing of an identity of the identification device, the identification device comprising a signal generator device configured for generating a reproducible acoustic signal in a mechanical manner when acted upon by the user, the reproducible acoustic signal including a clacking noise, a frequency spectrum of the clacking noise encoding an information, the signal generator device including at least one of a tongue, a plate, and a curved surface configured for folding upon an overcoming of an initial resistance, the folding generating the clacking noise, the respective at least one of the tongue, the plate, and the curved surface further configured for springing back to a respective original position subsequent to being acted upon.

21. (new) The identification device as recited in claim 20 wherein an encoding of the information is a function of a respective shaping of the respective at least one of the tongue, the plate, and the curved surface.

22. (new) The identification device as recited in claim 20 wherein the identification device includes at least one of a membrane body and a resonator, and wherein an encoding of the information is a function of a respective shaping of the respective at least one of the membrane body and the resonator.

23. (new) The identification device as recited in claim 20 wherein the identification device includes a card and wherein the element includes at least one of a tongue, a plate, and a curved surface integrally formed on the identification device.

24. (new) The identification device as recited in claim 20 wherein an encoding of the information is capable of being performed by the user using an encoding method selected from a predetermined plurality of encoding methods.--.

#### REMARKS

Fig. 1 has been amended to include the control unit 20.

Consideration of this application, as amended, is respectfully requested.

Support for all new claims is found in the specification as originally filed. It is respectfully submitted that no new matter has been added.

Applicants believe that no fees are due as a result of this amendment. In the event of a fee discrepancy, please charge our Deposit Account No. 50-0552.

Respectfully submitted,

DAVIDSON, DAVIDSON & KAPPEL, LLC

By: William C. Gehris  
William C. Gehris  
Reg. No. 38,156

Davidson, Davidson & Kappel, LLC  
485 Seventh Avenue - 14<sup>th</sup> Floor  
New York, New York 10018  
(212) 736-1940

"Express Mail" mailing label no : EL743185938 US

Date of deposit: December 4, 2001

I hereby certify that this correspondence and/or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above in an envelope addressed to "Commissioner of Patents and Trademarks, Washington, DC 20231"

DAVIDSON, DAVIDSON & KAPPEL, LLC

BY: Samuel Gomez  
Samuel Gomez

Application of: TRINKEL

International Application No. PCT/EP00/04816

Filed Herewith

**VERSION OF SPECIFICATION AND CLAIMS AMENDMENTS**  
**WITH MARKINGS TO SHOW CHANGES MADE**

IN THE SPECIFICATION:

Page 1 paragraph [0001]:

[0001] The present invention relates to a system including a portable identification medium, [especially] for example in [a] the form of a card, and a control unit with which information which is encoded on the identification medium can be read, the control unit allowing a user to access the system once the identity of the identification medium has been established. [The present invention moreover relates to the identification medium itself.]

Page 1 paragraph [0003]:

[0003] In these systems, it is a disadvantage that not only the medium must be equipped with a magnetic strip or a chip, which requires a comparatively large expenditure of effort and money but, above all, that the control unit must be provided with [means] a device for reading out the information, involving a corresponding degree of expenditure. Thus, the control unit must have, in particular, an intake for the medium. This intake, for example, a slot having an appropriate mechanism, requires considerable outlay and is susceptible to vandalism.

Page 1 paragraph [0004]:

[0004] Known are, moreover, such systems in which the code is transmitted acoustically with the assistance of an electronic tone generator located on the medium. In these systems, the medium requires a large expenditure of effort and money because of the generator. Besides, the transmission is very unreliable and frequently gives rise to system errors. Moreover, devices in

the form of cards are known which have a toothed profile on one edge, the information being encoded in the arrangement of the teeth. The acoustic signal is generated by sweeping an object over the profile, a noise developing in the process. In this context, it is a disadvantage that, in addition to the medium, a further object must exist which is used to generate the signal. Due to the additionally required object, the system is complex and [impracticable] unpractical. Besides, the signal is reproducible only with difficulty since it depends on the speed and completeness of the sweeping movement.

Page 2, paragraph [0006]:

[0006] Therefore, [the] an object of the present invention is to [devise a] provide an access-controlled system which is rugged, easy to handle and inexpensive to manufacture while being highly reliably and reproducible. [At the same time, it is] It is also an object of the present invention to [devise] provide an identification medium which supports the system according to the present invention and at the same time is reliable, rugged and inexpensive.

Page 2, paragraph [0008]:

[0008] [It is an essential aspect of] According to the present invention [that a means] an acoustic signal-generating device is attached to the identification medium which, after a mechanically applied force has acted thereon, for example, subsequent to a pressing by the user, emits an acoustic signal by which the medium can be identified. To enable a reliable identification, it is required for the acoustic signal, whose frequency spectrum encodes information, to be reproducible. A generated signal must correspond to each further generated signal as exactly as possible.

Page 2, paragraph [0009]:

[0009] It is conceivable for such a system to be used in many areas. Thus, it is possible for telephone cards or credit cards to be provided with the [means] device according to the present invention. In the case of a telephone card, the acoustic signal would be picked up via a microphone of the telephone system, for example, through the handset, and sent to a central computer via the telephone line. The central computer would then carry out the billing of the

telephone call, the billing being allocated to the owner of the card via the acoustic signal. In the case of a credit card, it would be possible for the customer or account number of the card holder to be encoded in the signal. In this context, however, it is advantageous if the user authorizes himself/herself by entering a PIN code which is only known to him/her into the control unit.

Page 3, paragraph [0011]:

[0011] In principle, strings, rods, tongues, membranes, plates or air columns can be used as signal-generating [means] device. However, it is particularly simple and, therefore, advantageous, if the [means for generating the signal] signal-generating device features a tongue and/or a curved surface which is attached onto the medium in such a manner that it/they can be acted upon by a user pressing with a finger against a resistance, and that it/they emit(s) the signal ("clack") when the resistance is overcome. Devices of that kind are known as toys (frog clickers). After the clacking threshold is overcome, the [means] device springs back to the initial position. In this context, the mostly different noise ("click") emitted while springing back can also be used for encoding information.

Page 3, paragraph [0012]:

[0012] In this context, in [a particularly advantageous] an embodiment, the encoding of the information is effected by the individual shaping of the tongue or surface and/or by the design of their suspension, i.e., for example, by changing the resistance to be overcome. Extensive tests have shown that such a [means] device can generate an individual signal from whose frequency spectrum the coded information can be reliably read, advantageously after a Fourier transformation. In the course of time, the characteristic does not or only slightly change, it being possible for such a change to be allowed for via the computational algorithms. It is also conceivable for the information to be encoded by individually shaping the resonator, the individualization having to be effected by more significant measures in this case.

Page 4, paragraph [0014]:

[0014] In [a particularly simple] an embodiment, the tongue or curved surface are integrally formed on the identification medium which is designed as a card. To produce a resistance, it is

advantageous for the tongue to be provided with a longitudinal groove or with walls which project perpendicularly to the top surface of the card. A "clacking" effect can also be attained via a peripheral clamping on both sides. The integral formation provides a good coupling of the [means] device to the resonator and, in this manner, a correspondingly good sound amplification.

Page 4, paragraph [0016]:

[0016] In [a particularly advantageous] an embodiment, the medium is designed as a key tag, thus being handy at any time and relatively unlosable. Moreover, it can be advantageous to provide the medium, in particular the card, with a magnetic strip and/or with a chip or to provide known cards with a [means] device according to the present invention for generating an acoustic signal. In this context, the acoustic signal can be used for a redundant individualization so that security is further increased.

Page 5, paragraph [0018]:

[0018] Figure 1 shows a control unit and a hand with an identification medium in the form of a card;

Figure 2 shows a card in a top view (a) and in an elevation (b);

[Figure 3 shows] Figures 3a)-3e) show the tongue of a card with different shapes; and

Figure 4 shows a tongue clamped on both sides.

Page 5, paragraph [0019]:

[0019] Figure 1 shows a control unit 20 and an identification medium in the form of a card 1 in the known cheque card size which is held in hand 2 of a user of the system. On card 1, individual information is encoded in the acoustic signal which is emitted by a curved surface 4 formed in card surface 3 when the curved surface is pressed in by the pressing of thumb 5 against a resistance. The information is encoded in the frequency spectrum of the noise ("click-clack").

Page 5, paragraph [0020]:

[0020] Card 1 is manufactured in known manner from plastic (PE) and serves as a resonator. Provided in the card is an opening 6 which is covered by a tongue 7 in the case of the [example] embodiment according to Figure 2. Tongue 7 is formed of metal and secured onto the card via weld points 8 in a manner that it is prestressed. Tongue 7 has a depression 9 which generates a tension, thus influencing the frequency spectrum of the acoustic signal. Card 1 according to Figure 2 has a cut-out 10 to which a key 11 can be attached.

Page 6, paragraph [0021]:

[0021] Figure 3 shows tongues which are differently shaped and, therefore, generate different noises. All tongues have a depression 9. Provided in the tongues according to Figures [a) and b)] 3a) and 3b) are small bores 12 which give rise to a shift in the frequency spectrum. Bores 12 are placed at different locations of tongues 7 and, therefore, generate different frequencies. In tongues 7 of [examples c), d) and e)] the embodiments shown in Figures 3c), 3d) and 3e), provision is made for slits 13 at different locations or in different sizes. The shown alterations of tongue 7, which can be effected by the users themselves, give rise to differences in the frequency spectrum which can be detected by the system, as [the tests showed] tests have shown.

Page 7 first line : --WHAT IS CLAIMED IS-- [What is claimed is]



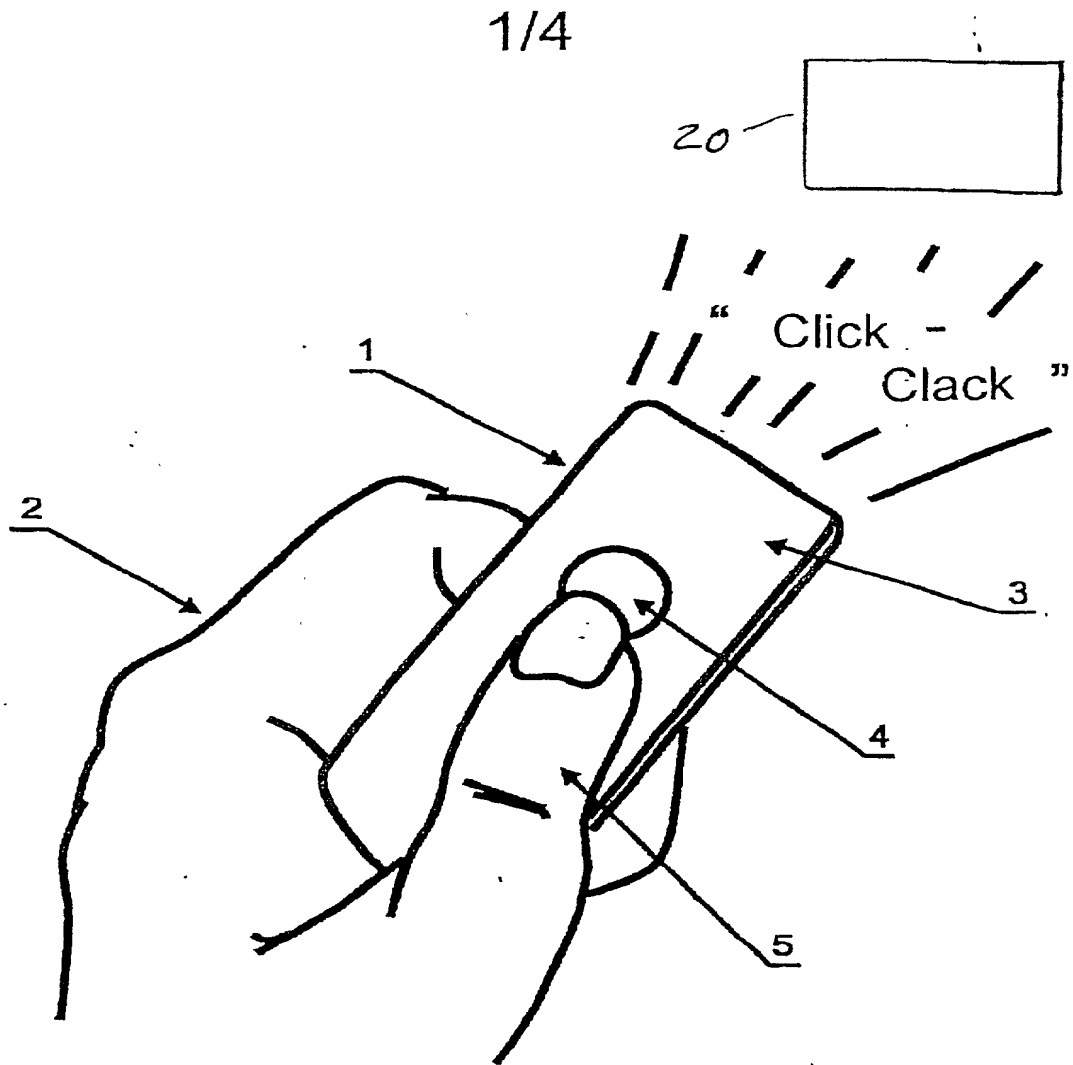


Fig. 1

520.1006

**UNITED STATES PATENT & TRADEMARK OFFICE**

Re: Application of: **Marian TRINKEL**  
Serial No.: To Be Assigned  
Filed: Herewith  
For: **ACOUSTIC-MECHANICAL VERIFICATION  
TRANSMITTER**

**LETTER RE: PRIORITY**

Assistant Commissioner for Patents  
P.O. BOX 2327  
Arlington, VA 22202

December 3, 2001


Sir:

Applicant hereby claims priority of the German Patent Application No. 199 25 509.1 filed June 4, 1999 through International Patent Application Serial No. PCT/EP00/04816, filed May 26, 2000.

Respectfully submitted,

DAVIDSON, DAVIDSON &amp; KAPPEL, LLC

By

  
\_\_\_\_\_  
William C. Gehris  
Reg. No. 38,156

Davidson, Davidson & Kappel, LLC  
485 Seventh Avenue, 14<sup>th</sup> Floor  
New York, New York 10018  
(212) 736-1940

4/pts

[520.1006]

## ACOUSTIC-MECHANICAL VERIFICATION TRANSMITTER

[0001] The present invention relates to a system including a portable identification medium, especially in a form of a card, and a control unit with which information which is encoded on the identification medium can be read, the control unit allowing a user to access the system once the identity of the identification medium has been established. The present invention moreover relates to the identification medium itself.

[0002] Such systems in which a user identifies himself via an identification medium are known in many forms. In this connection, the medium serves as a key for access to the system. In the process, the medium is presented to the control unit and, as soon as the control unit establishes that the medium is authorized, i.e., a matching key, it enables access to the system. In the known systems heretofore, a numeric code, for example, a customer number is stored on a magnetic strip or a chip on the medium, i.e., a card, as individualizing information. The code is then read out via a corresponding reader device integrated in the control unit and is checked by a computer.

[0003] In these systems, it is a disadvantage that not only the medium must be equipped with a magnetic strip or a chip, which requires a comparatively large expenditure of effort and money but, above all, that the control unit must be provided with means for reading out the information, involving a corresponding degree of expenditure. Thus, the control unit must have, in particular, an intake for the medium. This intake, for example, a slot having an appropriate mechanism, requires considerable outlay and is susceptible to vandalism.

[0004] Known are, moreover, such systems in which the code is transmitted acoustically with the assistance of an electronic tone generator located on the medium. In these systems, the medium requires a large expenditure of effort and money because of the generator. Besides, the transmission is very unreliable and frequently gives rise to system errors. Moreover, devices in the form of cards are known which have a toothed profile on one edge, the information being encoded in the arrangement of the teeth. The acoustic signal is generated by sweeping an object over the profile, a noise developing in the process. In this

context, it is a disadvantage that, in addition to the medium, a further object must exist which is used to generate the signal. Due to the additionally required object, the system is complex and impracticable. Besides, the signal is reproducible only with difficulty since it depends on the speed and completeness of the sweeping movement.

[0005] Also known are systems which bring about an identification via spoken speech. These systems are complex and not very reliable since they are dependent on a plurality of incalculable parameters.

[0006] Therefore, the object of the present invention is to devise a system which is rugged, easy to handle and inexpensive to manufacture while being highly reliably and reproducible. At the same time, it is an object of the present invention to devise an identification medium which supports the system according to the present invention and at the same time is reliable, rugged and inexpensive.

[0007] This objective is achieved by the system according to Claim 1 and by the identification medium according to Claim 6.

[0008] It is an essential aspect of the present invention that a means is attached to the identification medium which, after a mechanically applied force has acted thereon, for example, subsequent to a pressing by the user, emits an acoustic signal by which the medium can be identified. To enable a reliable identification, it is required for the acoustic signal, whose frequency spectrum encodes information, to be reproducible. A generated signal must correspond to each further generated signal as exactly as possible.

[0009] It is conceivable for such a system to be used in many areas. Thus, it is possible for telephone cards or credit cards to be provided with the means according to the present invention. In the case of a telephone card, the acoustic signal would be picked up via a microphone of the telephone system, for example, through the handset, and sent to a central computer via the telephone line. The central computer would then carry out the billing of the

telephone call, the billing being allocated to the owner of the card via the acoustic signal. In the case of a credit card, it would be possible for the customer or account number of the card holder to be encoded in the signal. In this context, however, it is advantageous if the user authorizes himself/herself by entering a PIN code which is only known to him/her into the control unit.

**[0010]** It is a particular advantage of the present invention that systems of that kind are rugged and simple. Thus, the acoustic signal can be picked up by a simple microphone which is integrated in the control unit. Complicated electronics featuring a read head and, above all, the insertion aperture can be dispensed with. In this context, known systems, in particular speech recognition systems, are available for evaluating the acoustic information. The system makes it possible for the medium to be reliably identified.

**[0011]** In principle, strings, rods, tongues, membranes, plates or air columns can be used as signal-generating means. However, it is particularly simple and, therefore, advantageous, if the means for generating the signal features a tongue and/or a curved surface which is attached onto the medium in such a manner that it/they can be acted upon by a user pressing with a finger against a resistance, and that it/they emit(s) the signal ("clack") when the resistance is overcome. Devices of that kind are known as toys (frog clickers). After the clacking threshold is overcome, the means springs back to the initial position. In this context, the mostly different noise ("click") emitted while springing back can also be used for encoding information.

**[0012]** In this context, in a particularly advantageous embodiment, the encoding of the information is effected by the individual shaping of the tongue or surface and/or by the design of their suspension, i.e., for example, by changing the resistance to be overcome. Extensive tests have shown that such a means can generate an individual signal from whose frequency spectrum the coded information can be reliably read, advantageously after a Fourier transformation. In the course of time, the characteristic does not or only slightly change, it being possible for such a change to be allowed for via the computational algorithms. It is also

conceivable for the information to be encoded by individually shaping the resonator, the individualization having to be effected by more significant measures in this case.

**[0013]** It is a special advantage of the medium according to the present invention that no complex electronics and, in particular, no battery are included so that its disposal does not create any problems. At the same time, the "frog clicker function" is easy to be implemented, offering a large variability of the encoded information, and can easily be integrated in a rugged medium, in particular, in the form of a card. Such a card having an integrated "frog clicker function" is durable and stands out by its compact design. In addition, it is easy and inexpensive to manufacture and particularly suitable for use in telecommunications media that use the speech frequency band. It should be pointed out as an advantage that the signal-generating medium according to the present invention does not require any further aids as were needed in related art heretofore.

**[0014]** In a particularly simple embodiment, the tongue or curved surface are integrally formed on the identification medium which is designed as a card. To produce a resistance, it is advantageous for the tongue to be provided with a longitudinal groove or with walls which project perpendicularly to the top surface of the card. A "clacking" effect can also be attained via a peripheral clamping on both sides. The integral formation provides a good coupling of the means to the resonator and, in this manner, a correspondingly good sound amplification.

**[0015]** It is particularly advantageous if the encoding can be carried out by the user himself/herself. To this end, the user can be given corresponding possible methods. Thus, the user receives, for example, a card whose tongue which does not have any changes yet and which therefore emits a basic noise. The individualization is then carried out by the user via punching or pressing depressions into the tongue, or by shaping the curved surface. In this context, the mechanical variation brings about an acoustic variation. The noise generated in this manner is subsequently stored in a data base together with the necessary information. Thus, the card is initialized.

[0016] In a particularly advantageous embodiment, the medium is designed as a key tag, thus being handy at any time and unlosable. Moreover, it can be advantageous to provide the medium, in particular the card, with a magnetic strip and/or with a chip or to provide known cards with a means according to the present invention for generating an acoustic signal. In this context, the acoustic signal can be used for a redundant individualization so that security is further increased.

[0017] The present invention is depicted on the basis of the drawings and will be explained in greater detail in the following.

[0018] Figure 1 shows a hand with an identification medium in the form of a card;

Figure 2 shows a card in a top view (a) and in an elevation (b);

Figure 3 shows the tongue of a card with different shapes; and

Figure 4 shows a tongue clamped on both sides.

[0019] Figure 1 shows an identification medium in the form of a card 1 in the known cheque card size which is held in hand 2 of a user of the system. On card 1, individual information is encoded in the acoustic signal which is emitted by a curved surface 4 formed in card surface 3 when the curved surface is pressed in by the pressing of thumb 5 against a resistance. The information is encoded in the frequency spectrum of the noise ("click-clack").

[0020] Card 1 is manufactured in known manner from plastic (PE) and serves as a resonator. Provided in the card is an opening 6 which is covered by a tongue 7 in the case of the example according to Figure 2. Tongue 7 is formed of metal and secured onto the card via weld points 8 in a manner that it is prestressed. Tongue 7 has a depression 9 which generates a tension, thus influencing the frequency spectrum of the acoustic signal. Card 1 according to Figure 2 has a cut-out to which a key 11 can be attached.

**[0021]** Figure 3 shows tongues which are differently shaped and, therefore, generate different noises. All tongues have a depression 9. Provided in the tongues according to Figures a) and b) are small bores 12 which give rise to a shift in the frequency spectrum. Bores 12 are placed at different locations of tongues 7 and, therefore, generate different frequencies. In tongues 7 of examples c), d) and e), provision is made for slits 13 at different locations or in different sizes. The shown alterations of tongue 7, which can be effected by the users themselves, give rise to differences in the frequency spectrum which can be detected by the system as the tests showed.

**[0022]** Figure 4 shows the cut-away portion of a card 1 featuring opening 6, opening 6 being covered by a tongue 14. Tongue 14 is fastened to the card with rivets 15 on both sides, and has a depression 9 for individualization. In this exemplary embodiment, the frequency spectrum can be varied via the tension with which tongue 14 is clamped.



What is claimed is:

1. A system including a portable identification medium, especially in a form of a card, and a control unit with which information which is encoded on the identification medium can be read, the control unit allowing a user to access the system once the identity of the identification medium has been established,  
 wherein the identification medium (1) has an element (4) for generating a reproducible acoustic signal in a mechanical manner, the frequency spectrum of the signal encoding the information.
2. The system as recited in Claim 1,  
 wherein the control unit features a microphone via which the acoustic signal can be fed to an arithmetic unit, the arithmetic unit carrying out the identification of the signal.
3. The system as recited in Claim 1 or 2,  
 wherein the identification medium is a card (1), in particular made of plastic and, in particular in the dimensions of a credit card.
4. The system as recited in one of the preceding Claims,  
 wherein the identification medium (1) constitutes a membrane body or a resonator.
5. The system as recited in one of the preceding Claims,  
 wherein a code, in particular an acoustic PIN code can be entered into the control unit.
6. An identification medium, in particular for use in a system according to Claims 1 through 5,  
 characterized by a means (4) which emits a reproducible acoustic signal when mechanically acted upon by the user (5).

7. The identification medium as recited in Claim 6,  
wherein the means features a tongue (7), a plate and/or a curved surface (4) which can be folded while overcoming an initial resistance, the folding generating a clacking noise which contains the code, and the tongue (7), the plate or the surface (4) springing back to their original position subsequent to being acted upon.
8. The identification medium as recited in Claim 7,  
wherein the encoding is effected by the individual shaping of the tongue (7), of the plate, or of the surface (4).
9. The identification medium as recited in Claims 6 through 8,  
wherein the encoding is effected by the individual shaping of the membrane body or of the resonator.
10. The identification medium as recited in Claims 6 through 9,  
wherein the tongue (7), the plate or the surface (4) is integrally formed on the identification medium which is designed as a card.
11. The identification medium as recited in Claims 6 through 10,  
wherein the encoding can be carried out by the user himself/herself according to given possible methods.

## Abstract

The invention relates to a system comprising a portable identification medium, especially in a form of a card, and a control unit with which the encoded information on the identification medium can be read. Said control unit allows a user access to the system once the identity of the identification medium has been established. The identification medium (1) has an element (4) for generating a reproducible acoustic signal by mechanical means, the frequency spectrum of this signal encoding the information.

1/4

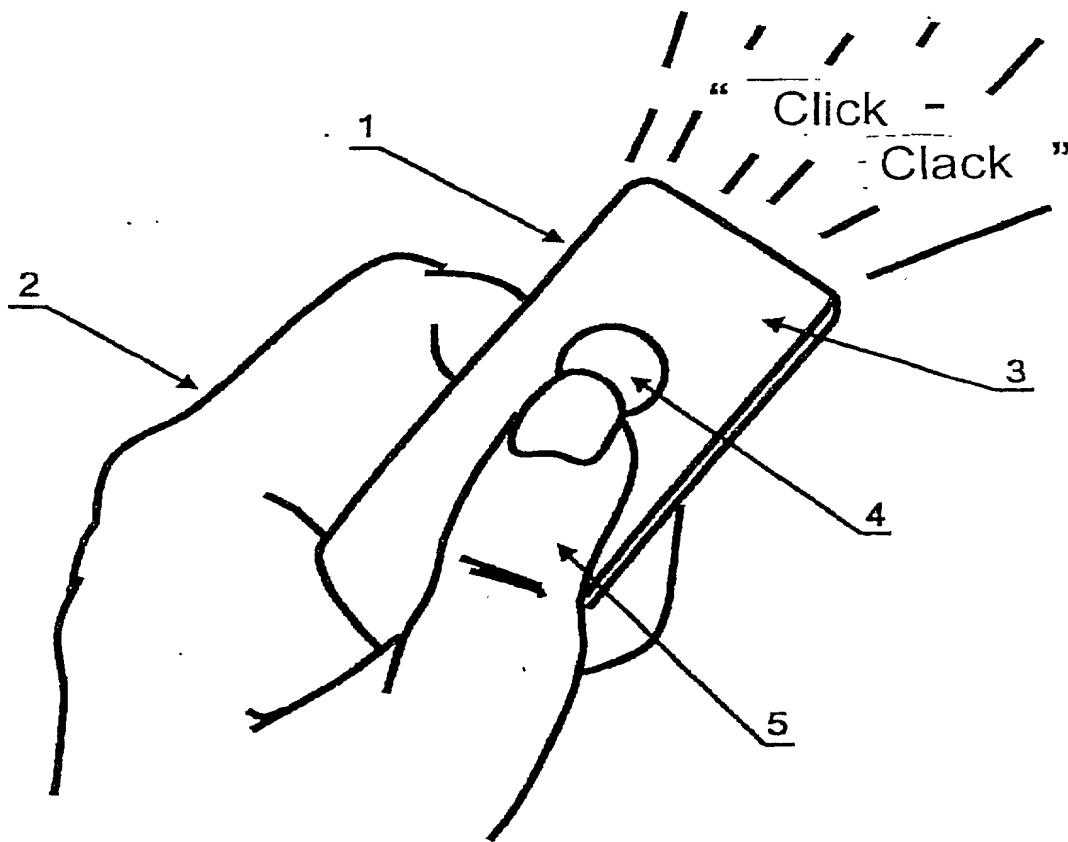


Fig. 1

2/4

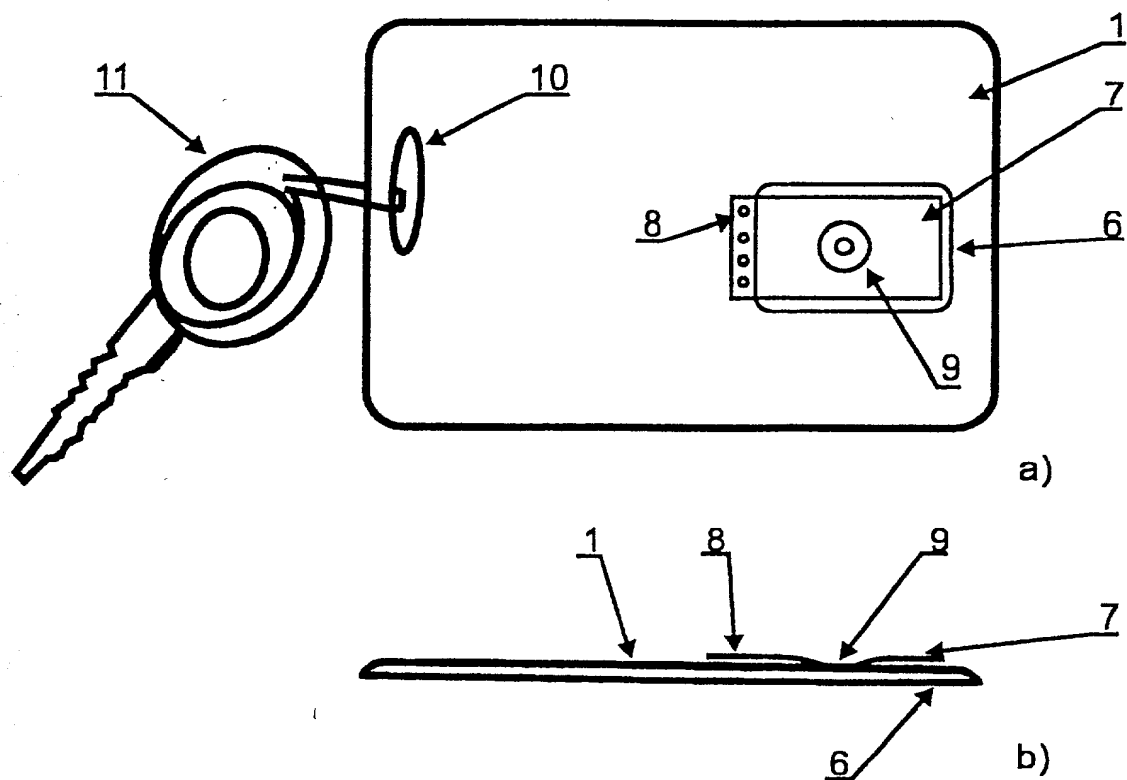


Fig. 2

3/4

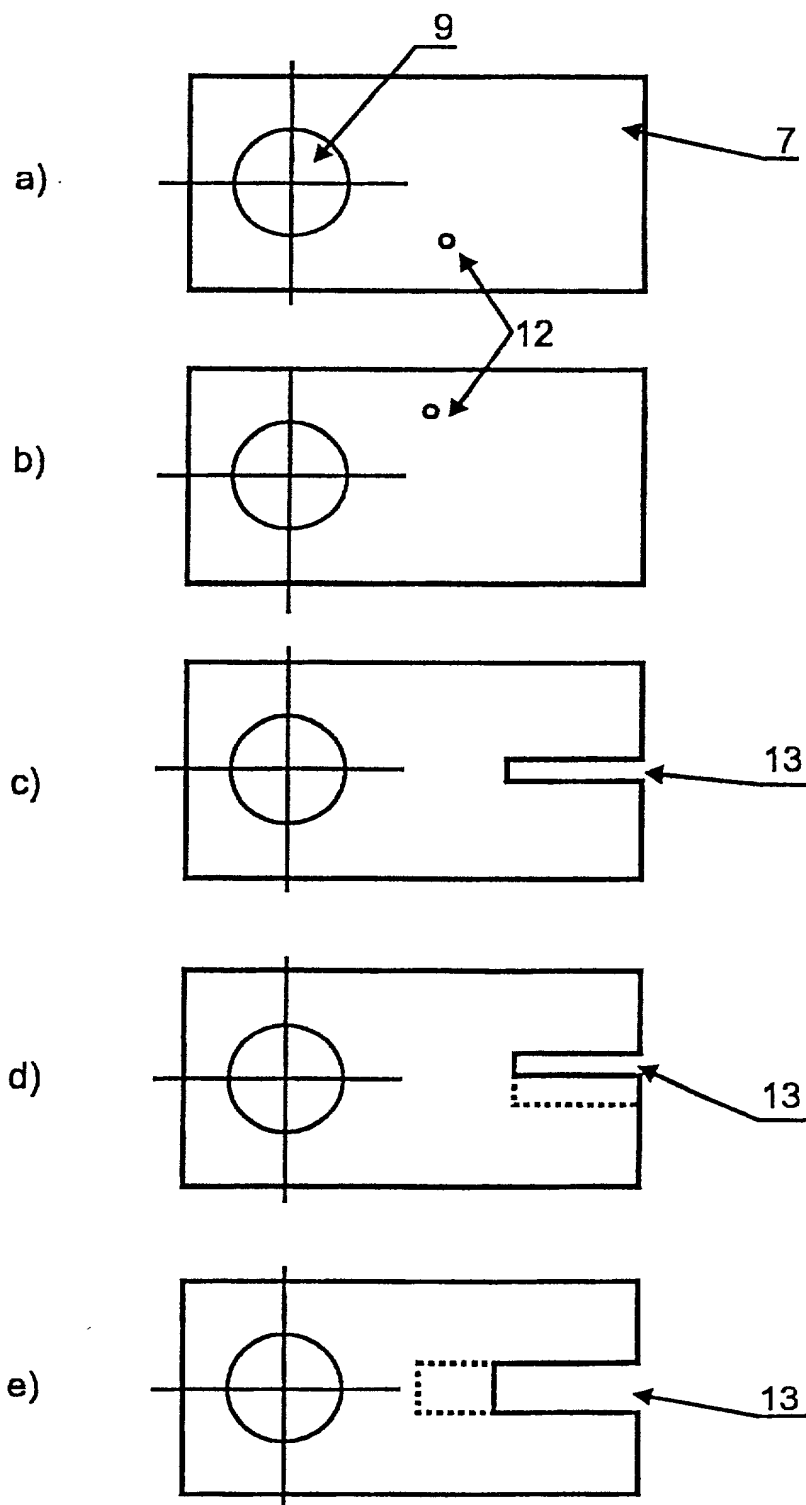


Fig. 3

4/4

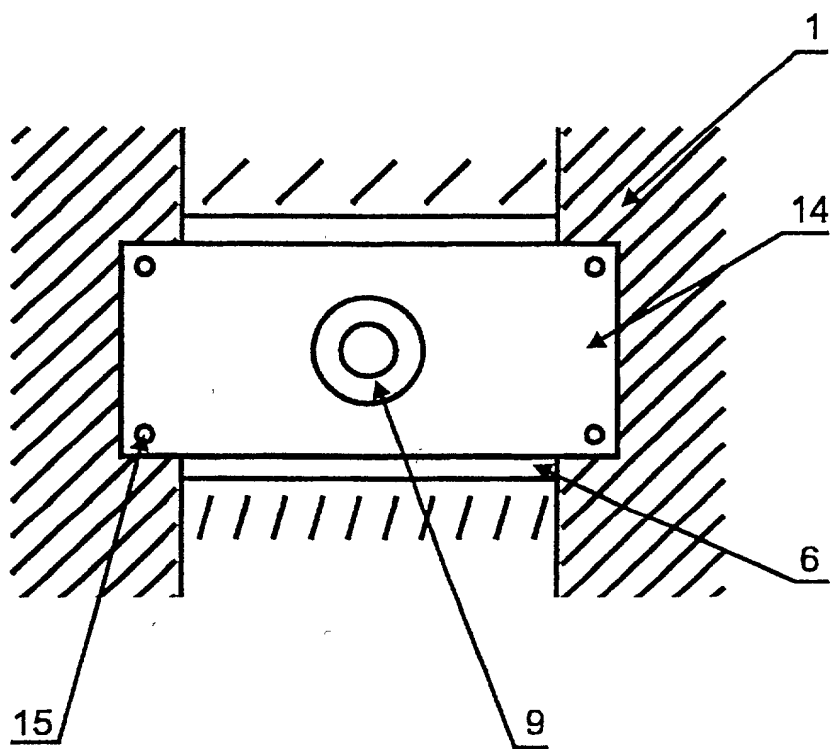


Fig. 4

## DECLARATION AND POWER OF ATTORNEY

Docket No.:520.1006

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed and for which a patent is sought on the invention entitled:

ACOUSTIC-MECHANICAL VERIFICATION TRANSMITTER, the specification of which (check one)

☐ is attached hereto

☒ was filed on 26 May, 2000 as International Application Serial No. PCT/EP00/04816 and was amended on (if applicable).

☐ I hereby authorize and request our attorneys, Davidson, Davidson & Kappel, LLC of 485 Seventh Avenue, New York, New York 10018 to insert here in parentheses (application number \_\_\_\_\_, filed \_\_\_\_\_) the filing date and application number of said application when known.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information that is known to me to be material to the patentability of this application as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign and/or provisional application(s) for patent or inventor's certificate listed below and have also identified below any foreign and/or provisional application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

## PRIOR APPLICATION(S)

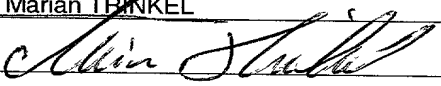
199 25 509.1 Number	Germany Country	4 June 1999 Day/Month/Year Filed	Priority claimed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
 Number	 Country	 Day/Month/Year Filed	Priority claimed <input type="checkbox"/> Yes <input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial Number	Day/Month/Year Filed	Status
Application Serial Number	Day/Month/Year Filed	Status

And I hereby appoint Clifford M. Davidson, Reg. No. 32,728, Leslye B. Davidson, Reg. No. 38,854, Cary S. Kappel, Reg. No. 36,561, William C. Gehris, Reg. No. 38,156, Morey B. Wildes, Reg. No. 36,968, Robert J. Paradiso, Reg. No. 41,240, Erik R. Swanson, Reg. No. 40,833, Thomas P. Canty, Reg. No. 44,586, and all other registered attorneys and agents at Davidson, Davidson & Kappel, LLC, U.S. Patent and Trademark Office Customer Number 23280, my attorneys, with full power of substitution and revocation, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith; correspondence address: DAVIDSON, DAVIDSON & KAPPEL, LLC, 485 Seventh Avenue, 14th Floor, New York, New York 10018; Telephone: (212) 736-1940; Fax: (212) 736-2427.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor	Marian TRINKEL
Inventor's signature	
Date	21.10.2001
Residence	Huertgenwald, Germany OEX
Post Office Address	Am Dehlbach 13 D-52393 Huertgenwald, Germany
Citizenship	German

Full name of additional inventor	
Inventor's signature	
Date	
Residence	
Post Office Address	
Citizenship	

☐ Additional inventors named on attached sheet(s).